Some Record Trout Caught With Rod and Reel

	WORLD RECORD			CALIFORNIA RECORD		
Species	*Place caught*	*Pounds and ounces*	*Year*	*Place caught*	*Pounds and ounces*	*Year*
Rainbow	British Columbia	36	1954	Feather River	21-3	1926
Steelhead Rainbow	Wyoming	11	1948	Smith River	21-6	1948
Golden	Nevada	41	1925	Virginia Lake	9-14	1952
Lahontan Cutthroat	Loch Awe, Scotland	39-8	1866	Lake Tahoe	31-8	1911
Brown	Lake Pend Oreille, Idaho	32	1949	Regulator Lake	24	1945
Eastern Brook	Ontario	14-8	1916	Silver Lake	9-12	1932
Dolly Varden	Lake Pend Oreille, Idaho	37	1947	McCloud Reservoir	9-1*	1968
Lake	Lake Superior	63-2	1952	Lake Tahoe	32-12	1926

*Dressed weight; in the round this fish probably weighed 10 pounds or more. Dolly Varden trout weighing over 10 pounds have been reported from the McCloud River but these reports have not been fully verified.

Certainly only "one in a million" trout will reach the maximum age for any particular species and it is difficult to say how old trout might live to be if a violent death or some disease did not intervene.
In the following table are listed some of the oldest trout for which there are records.

Oldest Known Trout

Species	*Where found*	Age *in* years
Rainbow	Michigan and Canada	*7*
Steelhead Rainbow	Oregon	9
Eagle Lake Rainbow	California *(Eagle Lake)*	11
Kamloops Rainbow	British Columbia	7
Golden	California (Cottonwood *Lakes)*	6
Cutthroat	Oregon	10
Brown	Scotland	18
Eastern Brook	California (Bunny Lake)	19
Dolly Varden	California *(Mt. Shasta Hatchery)*	19
Lake	Northwest Territories	41

As one would expect, trout vary greatly in their age at first spawning. Some trout produce their first lot of eggs when only two years old; it is common for them to mature in three years; others may take longer. Usually trout spawn once a year until they get quite old, although they may miss a year now and then. At one California trout hatchery a few rainbow females spawned twice in one year, but that was the first time such an event had been recorded in the United States.

TROUT SENSES

Although much is known about the senses of sight, hearing, taste, smell, and touch in trout, a good deal remains to be learned.

SIGHT

In its general form the eye of a fish is not unlike that of land vertebrates, but it is necessarily somewhat modified for vision under water. As most anglers know, trout do see quite well.

"Can trout distinguish colors?" It is an old question that was partially answered by tests conducted by Department of Fish and Game biologists. Trout can distinguish certain colors. They respond to red and all shades of red, including light pink. Perhaps they can distinguish many other colors too, but in these tests they were attracted only by red. The tests also proved conclusively that trout can see and are attracted by red objects entirely out of the water.

HEARING

Although fish have no external or middle ear, they can respond to vibrations of the water and so do "hear". The swim bladder is the main sound receiver, transmitting its vibrations to the inner ear, but the lateral line system is also a hearing organ. The latter is particularly sensitive in the low-frequency and subsonic range, and at short distances it can locate sound sources. The internal ear of a trout is well developed and operates in essentially the same manner as it does in humans. Thus, trout have a good sense of balance. The lateral line of a trout can be seen as a series of pores in the scales along each side. These pores open into tubes in the scales and one tube connects with the next, forming a continuous canal extending from the head to the rail. The canal is filled with mucus, which conducts vibrations to the nerve endings beneath. These nerve impulses, caused by vibrations in the water, are carried to the brain by a long nerve extending along the side of the fish beneath its skin.

TASTE

Fish have a reasonably well developed sense of taste and trout seem to be able to distinguish foods from inedible objects fairly well. A feeding trout will take almost anything into its mouth, but only those objects that taste right will be swallowed. There are taste buds in the mouth of a trout similar to those in higher animals. It is not clear why we find objects such as pine needles, which have no food value, in a trout's stomach. It is doubtful if they taste like food. Some debris found quite often in a trout's stomach comes from the cases of caddis larvae, which are a favorite food. A good trout bait must appeal both to a trout's sense of smell and taste. A fish can sense food by either smelling or tasting the water.

SMELL

The sense of smell in fishes is relatively acute, as has been proved by numerous experiments. Trout are no exception. There is a pair of nostrils on either side of the snout of a trout, but these are not used for breathing.

Water enters one nostril, then passes over several folds of skin and out the other. It is well known that salmon are keenly aware of various odors, including the odors of a man's hand placed in the water. It is likely that trout have as keen or nearly as keen a sense of smell as do salmon.

TOUCH

A fish has nerve endings scattered over most of its body surface and responds to touch stimuli, hut its response is often unlike that of man and many other higher animals. This is largely because its brain is not developed to such an extent that the fish can do much "thinking" about its touch sensations. That is why a fish can be stuck by a hook and return in a moment to strike at the hook again. Without doubt it has felt the hook, but whether or not it has felt pain is difficult to say, since we judge such matters only by our own standards.

OTHER INTERESTING FACTS

RESPIRATION

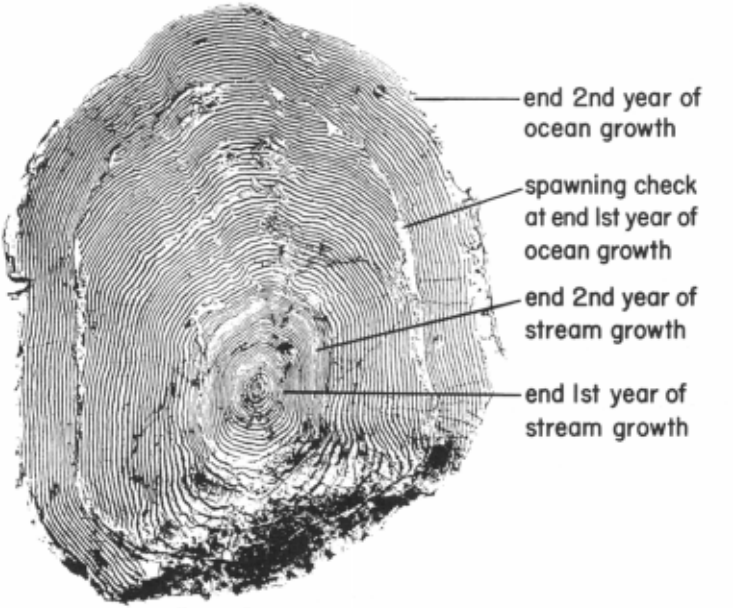
When a fish takes water into its mouth it is breathing, not drinking. The water passes across the hundreds of tiny gill filaments and then out through the gill slits, one on either side of the head. In each gill filament is a capillary through which the red blood cells are continually flowing. There is an exceedingly thin membrane separating the blood from the water, and oxygen in the water is exchanged for the carbon dioxide of the blood. Trout require more oxygen than some other kinds of fish, so we normally find trout living in well aerated waters.

SWIMMING SPEED

Trout are not the swiftest of all fish, but they are certainly not slow. They swim slowly most of the time, but when occasion demands they can develop reasonably high speeds for short distances. Tests have been run to determine the approximate swimming speed of trout, but speeds vary, depending upon the size and species of the trout, the temperature of the water, the health of the fish, and the amount of rapid swimming the particular fish has been doing. In a very general way, a rule of thumb approximation is that the swimming speed of trout in feet per second is equal to their length in inches. Thus, a three-inch trout can swim about three feet per second and a 12-inch trout can swim about 12 feet per second. Three feet per second is a trifle over two miles per hour and 12 feet per second is a little over eight miles per hour. Of course, these speeds can only be maintained for very short distances.

THE SCALES OF TROUT

In many kinds of fishes the scales are the best indicators of age. Under a microscope a fish's scale is found to be marked by many concentric lines, like the growth rings on a tree trunk. When the growth is slow these circuli are close together and, conversely, when the growth is rapid they are far



A scale from a 28-inch steelhead near the end of its fourth year of life, showing two years of stream fife and two years of ocean fife, with spawning at the end of the first year of ocean life. The scale was taken from the fish when it returned to the stream to spawn a second time—Photomicrograph (40x) by Leo Shapovalov.

apart. Fish usually grow rather slowly or not at all when the water is cold in the winter and when food is scarce. Thus, each winter the circuli on the scales are close together and one can count these bands of circuli and tell how old the fish is. When a trout spawns the edge of the scale is often absorbed. After spawning is over and the fish begins to grow again a check which is easily noted by a specialist in this field of study is left on the scale. Thus, one can tell the age, the speed of growth, and the number of times a trout has spawned by studying its scales under a microscope.

THE COLOR OF TROUT

A highly colored golden trout or an eastern brook trout at spawning time compares favorably with the more brilliantly colored tropical fishes. From these extremes of high coloration trout become less colorful until, in the case of a rainbow from some lakes, the back is dull green and the sides and belly range from silver to pure white. A rainbow from a deeply shaded mountain stream is often quite dark. Even the belly may be dark gray. The black spots, the parr marks, and the fine black stippling found on most trout are caused by great numbers of melanophores or black pigment cells filled with microscopic black pigment granules. Similarly, the red and yellow colors are produced by cells filled with red and yellow pigments.

Trout and many other kinds of fishes are able to change their colors quite rapidly and they do this by contracting or expanding these pigment cells. When thousands of these tiny cells are expanded the pigment granules are spread out and the fish becomes dark or red or yellow, as the case may be. Then, these cells may be stimulated by nerve impulses and made to contract into pin points of black or of color and immediately the fish becomes much lighter.

In addition to this rapid means of modifying color or the intensity of the color, a trout may lose or gain pigment, but this is a relatively slow process. Beneath the skin of a trout is a layer of guanin crystals in cells called guanophores. It is the guanin that gives the trout its silvery appearance. The pigment granules in the chromatophores (black, orange, or yellow) have several different shades of color and different combinations of these shades, together with the guanin, are sufficient to produce all the colors seen in a trout.